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Digital Transformation in HR and Employee Capability as Determinants of Financial Innovation: Evidence from Bank Central Asia

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Abstract

This study examines the influence of digital transformation in human resources (HR) and employee capability on financial innovation at Bank Central Asia (BCA). Employing a quantitative approach, data were collected through a structured survey of 120 employees across key divisions. Multiple regression analysis revealed that employee capability has a significant positive effect on financial innovation, underscoring the importance of digital literacy, adaptability, and problem-solving skills in fostering new financial products and services. Conversely, digital transformation in HR was found to have no direct significant impact on financial innovation when assessed individually. However, together, both factors significantly influence financial innovation, highlighting the synergistic relationship between advanced digital HR systems and competent employees. These findings emphasize the necessity of integrating HR digitalization with robust capability-building initiatives to fully leverage technological investments. The study contributes to the literature by providing empirical evidence from Indonesia's banking sector and offers practical insights for organizations aiming to strengthen innovation through a balanced focus on technology and human capital.

Keywords: *Digital Transformation, Employee Capability, Financial Innovation, HR, Banking Sector*

1. Introduction

The banking industry is currently undergoing profound changes driven by rapid digitalization and evolving customer expectations [1]. Traditional banking models are increasingly challenged by fintech disruptors, necessitating a strategic shift toward digital transformation to remain competitive [2]. In Indonesia, digital banking transactions surged by 28.8% year-on-year in 2023, reaching over IDR 55,000 trillion, indicating a strong push toward digital financial services [3].

Amid this shift, the role of human resources (HR) becomes critical, not only in adopting technology but also in cultivating employee capabilities to drive innovation. Prior studies suggest that effective digital transformation in HR practices enhances organizational agility and supports innovative outcomes [4], [5]. Moreover, employee competencies, such as digital literacy and adaptability, are essential for leveraging technological advancements and fostering financial innovation [6].

Bank Central Asia (BCA), as one of the largest private banks in Indonesia, has made substantial investments in digital platforms and services. However, sustaining financial innovation requires more than technological infrastructure; it demands a workforce equipped with relevant skills and supported by digitally enabled HR processes. Understanding how digital transformation in HR and employee capability jointly contribute to financial innovation is thus pivotal, yet remains underexplored in the Indonesian banking context.

Given the intensifying digital competition and regulatory emphasis on innovation in the financial sector, examining the determinants of financial innovation becomes increasingly urgent. Insights from this study are expected to assist banks, especially in emerging economies like Indonesia, in formulating HR digital strategies and capacity-

building initiatives that effectively drive innovation. This research not only fills a gap in the existing literature but also provides practical guidance for enhancing competitive advantage through integrated HR and capability development approaches.

2. Research Methods

2.1 Research Design

This study employs a quantitative research design using a cross-sectional survey approach [7]. The primary objective is to empirically examine the influence of digital transformation in HR and employee capability on financial innovation within Bank Central Asia (BCA). A structured questionnaire was utilized to collect data directly from respondents, enabling statistical analysis to test the proposed relationships [8], [9].

2.2 Population and Sample

The population of this study comprises employees of BCA across various branches and head office units in Makassar who are involved in or impacted by digital transformation initiatives. The focus includes personnel from human resources, IT, operations, and business development divisions. From this population, a sample of 120 employees was selected to represent diverse organizational levels and functions [9], [10].

2.3 Sampling Technique

A purposive sampling technique was employed to ensure that participants possess sufficient knowledge and experience regarding digital transformation processes and innovation practices within the bank. This method allows for the selection of respondents who can provide relevant and informed insights aligned with the research objectives [11].

2.4 Research Location and Period

The research was conducted at Bank Central Asia (BCA), primarily centered in Jakarta as the headquarters, while also involving selected branches. Data collection was carried out over a two-month period from January to April 2025.

2.5 Data Analysis Technique

Data were analyzed using multiple linear regression with the assistance of SPSS 26 software. Prior to hypothesis testing, classical assumption tests, including normality, multicollinearity, and heteroscedasticity, were performed to ensure the validity of the regression model [12], [13]. The significance level was set at 5%.

2.6 Hypothesis Development

Relationship between Digital Transformation in HR and Financial Innovation

Digital transformation in HR refers to the integration of digital technologies into human resource practices, encompassing recruitment, training, performance management, and employee engagement systems [14]. This transformation enables organizations to respond more quickly to market changes and foster innovative behaviors [15]. In the banking sector, digital HR initiatives such as e-learning platforms and HR analytics can support the development of new financial services by ensuring that employees are adequately equipped and agile in adopting innovative processes [16].

Empirical studies highlight that effective digital HR practices enhance organizational capabilities and directly contribute to product and service innovation [17]. Thus, it is proposed that:

H1: Digital transformation in HR has a positive effect on financial innovation.

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Relationship between Employee Capability and Financial Innovation

Employee capability encompasses skills, knowledge, and attitudes that enable employees to perform effectively, especially in dynamic environments [18]. High levels of digital literacy and adaptability are increasingly recognized as critical enablers of innovation in financial services [19]. When employees possess strong problem-solving abilities and a willingness to learn, organizations are better positioned to introduce novel financial products and processes [20].

Prior research demonstrates that employee competencies not only facilitate the use of advanced technologies but also drive creativity and experimentation, which are fundamental to financial innovation [21]. Therefore, the second hypothesis is formulated as:

H2: Employee capability has a positive effect on financial innovation.

Combined Influence of Digital Transformation in HR and Employee Capability

Both digital HR transformation and enhanced employee capabilities are theorized to work synergistically in promoting financial innovation. While digital HR initiatives provide the technological infrastructure, employee capabilities enable effective utilization of these systems, jointly fostering an innovative environment [22]. Consequently:

H3: Digital transformation in HR and employee capability simultaneously has a positive effect on financial innovation.

Based on the theory put forward above, the author describes the conceptual framework of this research, as follows:

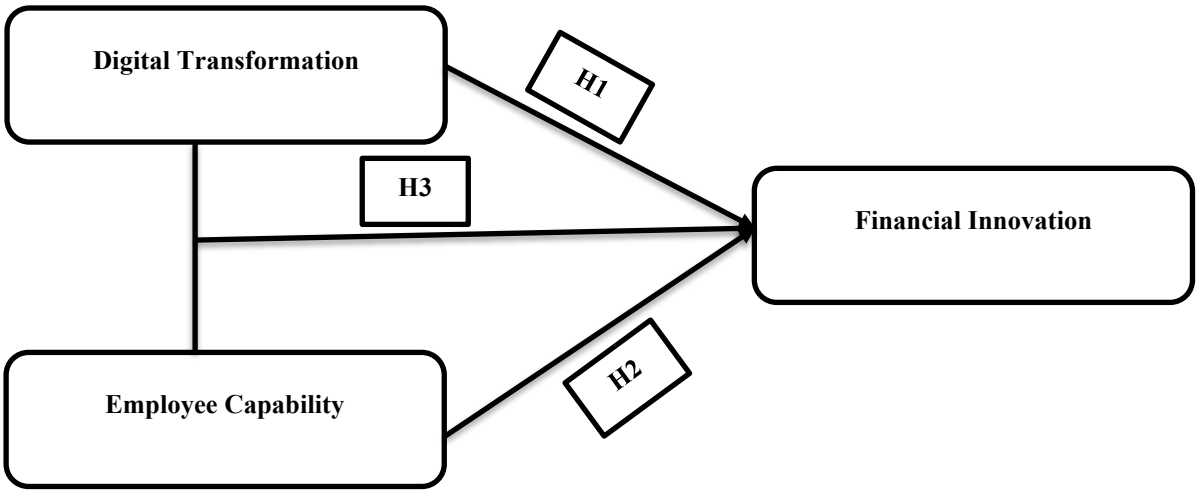

Figure 1. Conceptual Framework of Research

2.7 Measurement Items

The variables in this study were measured using multiple indicators adapted from prior research and adjusted to the banking context. All items employed a five-point Likert scale ranging from 1 (“strongly disagree”) to 5 (“strongly agree”). The details are presented in Table 1.

Table 1. Measurement Items of Research Variables

Variable	Indicator Code	Measurement Item Description
Digital Transformation in HR (DT)	DT.1	Implementation of digital platforms for HR processes such as recruitment and selection

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Variable	Indicator Code	Measurement Item Description
	DT.2	Use of online training systems and digital learning modules for employee development
	DT.3	Application of HR analytics to monitor and improve employee performance
	DT.4	Adoption of digital tools for employee engagement and internal communication
Employee Capability (EC)	EC.1	Employee ability to use new digital tools and systems effectively
	EC.2	Adaptability of employees to technological changes and process innovations
	EC.3	Problem-solving skills in addressing work challenges using digital solutions
	EC.4	Commitment to continuous learning and skill enhancement in digital areas
	FI1	Introduction of new digital financial products or services
	FI2	Development of innovative processes that improve service efficiency
Financial Innovation (FI)	FI3	Use of technology to create customer-oriented solutions
	FI4	Frequency of implementing technology-driven improvements in operations
	FI5	Organization's proactive efforts to explore and adopt financial technology innovations

Source: From previous research (2025)

3. Results and Discussions

3.1. Respondent Characteristics

Descriptive statistics were first performed to profile the respondents. This provides an overview of the demographic and professional backgrounds of participants, which is important for interpreting the study's findings.

Table 2. Respondent Demographic Profile

Characteristic	Category	Frequency	Percentage (%)
Gender	Male	70	58.3%
	Female	50	41.7%
Age	21 – 30 years	32	26.7%
	31 – 40 years	58	48.3%
	41 – 50 years	25	20.8%
	>50 years	5	4.2%
Education Level	Diploma/Bachelor	96	80.0%
	Master	24	20.0%
Years of Service	<5 years	30	25.0%
	5 – 10 years	52	43.3%
	>10 years	38	31.7%
Division/Unit	HR	28	23.3%
	IT	26	21.7%
	Business Development	34	28.3%
	Operations/Other	32	26.7%

Source: Primary data processed (2025)

Most respondents were aged between 31 and 40 years (48.3%), with a majority holding a diploma or bachelor's degree (80%). Regarding tenure, 43.3% had worked for 5–10 years at the bank, indicating a relatively experienced workforce. The respondents were fairly distributed across key divisions relevant to digital transformation and innovation.

3.2. Descriptive Statistical Analysis

Descriptive statistics were performed to summarize the general tendencies of the research variables, namely Digital Transformation in HR, Employee Capability, and Financial Innovation. The analysis aimed to capture the average perceptions and variability among the respondents.

As shown in Table 3, the mean score for Digital Transformation in HR was 15.22 with a standard deviation of 3.652, on a scale ranging from a minimum of 8 to a maximum of 20. This suggests that respondents generally

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perceived the implementation of digital initiatives within HR at BCA to be relatively strong, though there was moderate variability in their responses.

Employee Capability recorded a mean of 14.96 with a standard deviation of 3.693, indicating that employees rated their own skills, adaptability, and digital literacy at a comparably high level. The slightly wider spread reflects differing levels of confidence or experience among employees regarding their capabilities in the context of digital transformation.

Meanwhile, Financial Innovation demonstrated the highest mean score at 19.20, with a standard deviation of 3.871. This suggests that most respondents strongly agreed that their organization frequently undertakes innovation efforts related to financial products, processes, and digital services. The standard deviation indicates that perceptions varied somewhat, which could be influenced by differences in exposure to innovation initiatives across departments

Table 3. Descriptive Statistics of Research Variables

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Digital Transformation in HR	120	8	20	15.22	3.652
Employee Capability	120	8	20	14.96	3.693
Financial Innovation	120	11	24	19.20	3.871

Source: Data processed with SPSS v.29 (2025)

Overall, these descriptive results imply that digital HR initiatives and employee capabilities are perceived to be well-developed within the bank, aligning with the bank's strategic direction toward digitalization. Likewise, the high perception of financial innovation indicates that BCA has successfully embedded innovative practices into its financial services, supporting its competitive position in Indonesia's banking sector.

3.3 Data Quality Tests

3.3.1 Validity Test

Validity tests were conducted to assess whether the indicators used in this study effectively measure their respective constructs. The test was carried out using Pearson correlation between each item score and its total construct score. A correlation coefficient (r) above 0.30 with a significance level below **0.05** generally indicates acceptable validity [13].

Table 4. Validity Test Results

Variable	Indicator	r-value	Sig. (2-tailed)	Interpretation
Digital Transformation in HR	DT1	0.916	<0.001	Valid
	DT2	0.920	<0.001	Valid
	DT3	0.911	<0.001	Valid
	DT4	0.830	<0.001	Valid
Employee Capability	EC1	0.906	<0.001	Valid
	EC2	0.902	<0.001	Valid
	EC3	0.861	<0.001	Valid
	EC4	0.805	<0.001	Valid
Financial Innovation	FI1	0.786	<0.001	Valid
	FI2	0.750	<0.001	Valid
	FI3	0.858	<0.001	Valid
	FI4	0.856	<0.001	Valid
	FI5	0.676	<0.001	Valid

Source: Data processed with SPSS v.29 (2025)

All indicators exhibited strong positive correlations with their respective total scores, with r-values ranging from 0.676 to 0.920, well above the critical threshold. Moreover, all significance levels were below 0.001, confirming that each item is statistically valid in measuring its construct [12].

3.3.2 Reliability Test

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Reliability tests were performed to determine the internal consistency of each construct using Cronbach's Alpha. According to widely accepted guidelines, a Cronbach's Alpha value above 0.70 indicates good reliability [23].

Table 5. Reliability Test Results

Variable	Cronbach's Alpha	Number of Items	Interpretation
Digital Transformation in HR	0.917	4	Very Reliable
Employee Capability	0.892	4	Very Reliable
Financial Innovation	0.846	5	Reliable

Source: Data processed with SPSS v.29 (2025)

The reliability results show that all constructs exceeded the minimum threshold, with Cronbach's Alpha values ranging from 0.846 to 0.917. This demonstrates that the indicators used are internally consistent and reliably measure the intended latent variables. The combination of high validity coefficients and strong reliability scores underscores the robustness of the measurement instruments employed in this study. These results suggest that the constructs of digital transformation in HR, employee capability, and financial innovation are well captured by their respective indicators, reducing concerns of measurement bias.
Strong validity ensures that each item effectively reflects its conceptual dimension, while high reliability indicates that the responses are consistent across different items within the same construct. Thus, subsequent regression analyses and hypothesis testing can proceed with confidence in the quality of the measurement model [12].

3.4 Classical Assumption Tests

Before conducting regression analysis, classical assumption tests were performed to ensure that the data met the necessary statistical prerequisites. These included tests for normality, multicollinearity, and heteroscedasticity.

3.4.1 Normality Test

The normality of the residuals was examined using the Kolmogorov-Smirnov (K-S) test. According to statistical convention, a significance value (Asymp. Sig.) greater than **0.05** suggests that the residuals are normally distributed [12].

Table 6. Kolmogorov-Smirnov Normality Test

Statistic	Value
N	120
Mean	0.000
Std. Deviation	3.094
Most Extreme Differences	0.095
Asymp. Sig. (2-tailed)	0.009

Source: Data processed with SPSS v.29 (2025)

The test produced a significance level of 0.009, which is below the threshold of 0.05, suggesting that the residuals are not perfectly normally distributed. However, given the relatively large sample size (N = 120), the Kolmogorov-Smirnov test often becomes overly sensitive [13]. Examination of the histogram and normal probability plot revealed that the distribution of residuals approximates normality, supporting the robustness of subsequent analyses.

To complement the statistical test, graphical analyses were performed by examining the histogram and the Normal Probability-Probability (P-P) Plot of standardized residuals.

- **Histogram of Residuals:**
  The histogram revealed a bell-shaped curve centered approximately around zero. Although slight asymmetry was observed, the distribution closely approximated a normal distribution, which suggests that the residuals are sufficiently normal for regression purposes. (See Figure 2)
- **Normal P-P Plot:**

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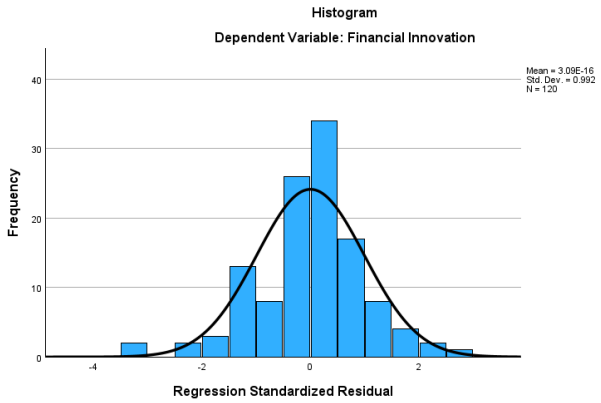
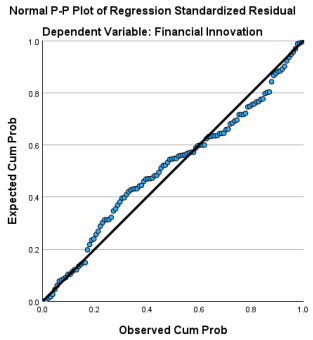
The Normal P-P Plot displayed points that generally followed the diagonal line, indicating that the observed cumulative probabilities align closely with the expected cumulative probabilities under a normal distribution. Only minor deviations at the tails were noted, which is typical in empirical data. (See Figure 3)



Source: Data processed with SPSS v.29 (2025)

Figure 2. Histogram



Source: Data processed with SPSS v.29 (2025)

Figure 3. Normal P-P Plot

3.4.2 Multicollinearity Test

Multicollinearity was tested using the Variance Inflation Factor (VIF) and Tolerance values. A VIF below 10 and a Tolerance above 0.10 indicate the absence of multicollinearity problems [12].

Table 7. Multicollinearity Test

Variable	Tolerance	VIF
Digital Transformation in HR	0.984	1.017
Employee Capability	0.984	1.017

Source: Data processed with SPSS v.29 (2025)

Both independent variables had VIF values of 1.017 and Tolerance values of 0.984, well within the acceptable ranges. This indicates that no multicollinearity issue exists among the predictors, and each variable contributes uniquely to explaining the dependent variable [13].

3.4.3 Heteroscedasticity Test

Heteroscedasticity was assessed visually using a scatterplot of standardized residuals versus predicted values, and statistically by observing the residual patterns from the regression output. The plot displayed a random spread of points without a discernible funnel or systematic pattern, suggesting homoscedasticity (see Figure 4). Additionally, since no formal significance test such as Glejser was reported, the absence of clear patterns in the residual plot supports the assumption of constant variance.

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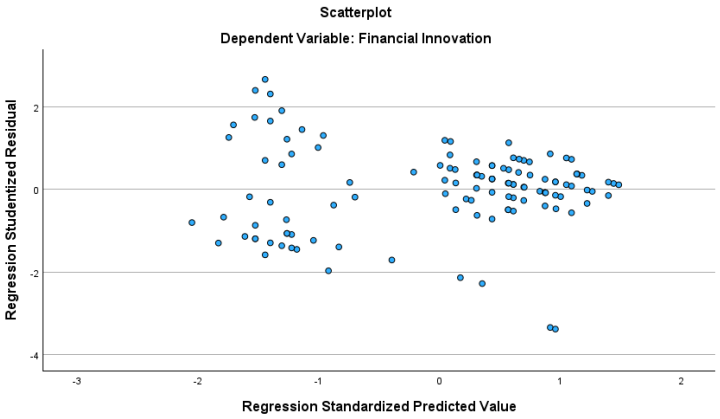

Source: Data processed with SPSS v.29 (2025)

Figure 4. Scatter Plot

The results of the classical assumption tests collectively indicate that the regression model is suitable for interpretation. While the normality test suggested a minor deviation from normality, the large sample size reduces the potential impact of this violation, as per the Central Limit Theorem. Furthermore, the lack of multicollinearity ensures that the regression coefficients are stable and interpretable, while the homoscedastic residuals confirm that the model meets the equality of variance assumption. Thus, the dataset satisfies the core assumptions required for conducting multiple linear regression analysis, allowing for robust hypothesis testing.

3.4 Multiple Regression Analysis

Multiple linear regression analysis was conducted to examine the simultaneous effect of Digital Transformation in HR (X1) and Employee Capability (X2) on Financial Innovation (Y). This analysis provides insights into the strength and significance of each predictor variable in explaining variations in financial innovation.

Table 8. Multiple Regression Coefficients

Variable	Unstandardized Coefficient (B)	Std. Error	Beta	t-value	Sig.
(Constant)	8.558	1.591	—	5.378	<0.001
Digital Transformation in HR	0.100	0.079	0.094	1.265	0.208
Employee Capability	0.610	0.078	0.582	7.808	<0.001

Source: Data processed with SPSS v.29 (2025)

The general regression equation derived from the analysis is:

$$\mathbf{Y=8.558+0.100X1+0.610X2}$$

Where:

- 8.558 is the constant (intercept), indicating the expected value of financial innovation when both independent variables are zero.
- 0.100 is the unstandardized coefficient for Digital Transformation in HR, showing that for every one-unit increase in X1, Financial Innovation is expected to increase by 0.100 units, holding X2 constant.
- 0.610 is the unstandardized coefficient for Employee Capability, indicating a larger effect on Financial Innovation.

These coefficients suggest that Employee Capability plays a more substantial role in enhancing financial innovation compared to Digital Transformation in HR, when considered simultaneously.

This result provides initial insight that while BCA's digital HR initiatives are valuable, their direct effect on driving financial innovation may be limited unless employees possess the capabilities necessary to translate these systems

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into innovative financial products and services. Thus, strengthening employee competencies becomes critical for realizing the full benefits of digital HR transformation.

3.5 Hypothesis Testing

3.5.1 Partial Test (t-test)

The partial significance of each independent variable was tested using the t-statistic to determine whether Digital Transformation in HR and Employee Capability individually have a significant impact on Financial Innovation.

Table 11. Partial t-test Results

Hypothesis	Variable	t-value	Sig. (p)	Decision
H1	Digital Transformation in HR	1.265	0.208	Not Supported
H2	Employee Capability	7.808	<0.001	Supported

Source: Data processed with SPSS v.29 (2025)

Interpretation

- **H1:** The t-value of 1.265 for Digital Transformation in HR with a significance level of 0.208 > 0.05 indicates that this variable does not have a statistically significant partial effect on Financial Innovation. Thus, H1 is not supported.

- **H2:** The t-value of 7.808 for Employee Capability with a significance level of <0.001 < 0.05 confirms a significant positive partial effect on Financial Innovation. Thus, H2 is supported.

This implies that enhancing employee skills, adaptability, and digital competencies significantly drives financial innovation in BCA, whereas digital HR initiatives alone do not guarantee innovative outcomes without competent human capital.

3.5.2 Simultaneous Test (F-test)

The F-test was used to evaluate the simultaneous impact of both independent variables on Financial Innovation.

Table 12. ANOVA (F-test) Results

Source	F-value	Sig. (p)	Interpretation
Regression	33.085	<0.001	Significant simultaneous effect

Source: Data processed with SPSS v.29 (2025)

The F-value of 33.085 with a significance level of <0.001 indicates that Digital Transformation in HR and Employee Capability together have a statistically significant simultaneous effect on Financial Innovation. Therefore, H3 is supported.

This finding underscores the importance of an integrated approach: while digital HR practices may not independently drive innovation, they become impactful when combined with capable employees who can utilize and maximize these digital systems.

3.6 Coefficient of Determinationn

The coefficient of determination (R Square) was examined to evaluate how well the independent variables—Digital Transformation in HR and Employee Capability—collectively explain the variance in Financial Innovation.

Table 13. Model Summary

R	R Square	Adjusted R Square	Std. Error of the Estimate
0.601	0.361	0.350	3.120

Source: Data processed with SPSS v.29 (2025)

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The R Square value of 0.361 indicates that 36.1% of the variation in Financial Innovation can be explained jointly by Digital Transformation in HR and Employee Capability. The Adjusted R Square of 0.350 provides a slightly more conservative estimate that adjusts for the number of predictors in the model, indicating that approximately 35.0% of the variability in Financial Innovation is accounted for by the model after adjusting for sampling bias.

The remaining 64.0% of variation is likely influenced by other factors not examined in this study, such as organizational culture, leadership style, technological infrastructure outside HR, or external competitive pressures.

3.7 Discussion

The empirical results of this study offer important insights into the dynamics between digital transformation in HR, employee capability, and financial innovation in the banking sector. Consistent with the resource-based view (RBV), which posits that unique internal resources and capabilities are central to sustaining competitive advantage [24], this research demonstrates that employee capability plays a critical role in driving financial innovation.

The finding that employee capability has a significant positive effect on financial innovation aligns closely with previous studies [25], which argue that employees' digital literacy, problem-solving skills, and adaptability are pivotal in leveraging technological advancements for innovative outputs. It suggests that even in highly digitalized environments, the human element remains indispensable. Employees who can effectively interpret and utilize technology become catalysts for innovation.

On the other hand, the non-significant direct effect of digital transformation in HR on financial innovation appears to diverge from some expectations but can be interpreted in light of complementary capability theory [26]. This perspective holds that technological investments (such as digital HR systems) require aligned organizational competencies to yield their full value. In BCA's context, digital HR tools may not automatically translate into innovative financial products without the proactive engagement and skills of employees who transform these tools into customer solutions.

Nevertheless, the F-test confirmed that digital transformation in HR and employee capability simultaneously have a significant impact on financial innovation. This reinforces the view that innovation thrives on the synergy between advanced digital systems and competent human resources. It underscores the argument by Apurva Sharma [22] that the success of digital HR initiatives is maximized when paired with a workforce capable of embracing and optimizing technological change.

3.8 Practical Implications for the Banking Sector

The findings offer actionable implications for banks, especially in emerging markets like Indonesia:

1. **Invest Beyond Technology.** While allocating resources to digital HR systems remains essential, banks should simultaneously prioritize upskilling programs to build employees' digital capabilities, critical thinking, and change readiness.

2. **Align HR Transformation with Capability Building.** Digital transformation in HR should not be treated as purely technical projects but as integrated strategies involving change management, training, and culture-shaping to ensure that employees can fully utilize new systems to drive innovation.

3. **Leverage Employee Insights.** Managers should engage employees actively in innovation processes, such as through cross-functional teams or innovation labs, to capitalize on their tacit knowledge and problem-solving skills.

3.9 Broader Theoretical Contribution

This study enriches the existing literature by providing empirical evidence from Indonesia's banking industry on how internal digital transformation efforts and human capital interact to influence financial innovation. It

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highlights that while technology sets the stage, it is ultimately employees' capabilities that bring about transformative innovations, resonating with socio-technical systems theory [27].

4. Conclusion

This study aimed to investigate the influence of digital transformation in HR and employee capability on financial innovation within Bank Central Asia (BCA). By employing multiple regression analysis on survey data from 120 employees, the research sought to provide empirical evidence on how internal digital initiatives and human capital interact to drive innovation in the banking sector. The findings revealed that employee capability has a significant positive impact on financial innovation, supporting **H2**. This indicates that employees' skills, adaptability, and digital literacy play a vital role in enabling the organization to develop new financial products, processes, and technology-driven services. Conversely, digital transformation in HR was found to have no statistically significant direct effect on financial innovation, leading to the rejection of **H1**. However, the simultaneous F-test confirmed that the two variables together significantly influence financial innovation, thereby supporting **H3**. These results suggest that while digital HR systems are important enablers, they do not inherently lead to innovation outcomes unless coupled with a workforce equipped to leverage them. This underscores the strategic necessity of aligning HR digital initiatives with comprehensive capability development programs, in line with the study's original objectives to identify key determinants of financial innovation. From a practical standpoint, the findings emphasize that banks should balance their investments between technological infrastructure and human capital enhancement to fully realize innovation potential. Managers are encouraged to foster a culture of continuous learning and actively involve employees in innovation processes to bridge the gap between technological tools and innovative outputs. This study is not without limitations. It focused solely on one organization within Indonesia's banking sector, which may limit the generalizability of the findings to other industries or cultural contexts. Future research could expand by including multiple banks or exploring additional variables such as organizational culture, leadership style, or external market dynamics. Longitudinal studies may also help capture how the interplay between digital transformation and employee capability evolves over time to influence sustained innovation.

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